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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/857,031	05/31/2001	Tekeshi Tobinaga	49602	7731

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KEIL & WEINKAUF  
1350 CONNECTICUT AVENUE, N.W.  
WASHINGTON, DC 20036

EXAMINER

CREPEAU, JONATHAN

ART UNIT	PAPER NUMBER
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1746

DATE MAILED: 11/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/857,031

Applicant(s)

TOBINAGA ET AL.

Examiner

Jonathan S. Crepeau

Art Unit

1746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 04 August 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 11-14 and 31-33 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 11-14 and 31 is/are rejected.
- 7) ☒ Claim(s) 32 and 33 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on August 4, 2004 has been entered.

This Office action addresses claims 11-14, 31, and newly added claims 32 and 33. Applicant's amendment to claim 11 has overcome the rejection over EP 591782 (Schultze et al). However, claims 11-14 and 31 remain rejected for substantially the reasons of record over JP '981 and Chang et al. Claims 32 and 33 contain allowable subject matter. This action is non-final.

### ***Claim Rejections - 35 USC § 102***

2. Claims 11-14 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 8-59981, as evidenced by Takeuchi et al (U.S. Patent 6,096,456). Regarding claims 11 and 12, in the abstract, JP '981 teaches a membrane comprising 100 weight parts of polyurethane-based resin (containing 75-95 wt% thermoplastic polyurethane elastomer) and 5-40 weight parts of a filler. Regarding claim 11, in paragraph 14 (Example 1) and Table 1 of the translation, the reference teaches that the polyurethane elastomer is present in an amount of 85 weight parts, EPDM is

present in an amount of 15 weight parts, and the filler is present in an amount of 30 weight parts. Thus, the polyurethane comprises 65.4 wt% of the total, and the filler comprises 23.1 wt% of the total. This is considered anticipatory of the ranges recited in claim 11. Regarding claim 13, the filler of Example 1 is calcium carbonate having an average particle size of 2 microns. As disclosed in paragraph 10, the filler may also comprise various oxides, sulfates, and carbonates such as silica or alumina, which are inherently Li-ion conducting materials (see col. 17, line 65 of Takeuchi). Regarding claims 11 and 14, the polyurethane is a segmented polyurethane comprising urethane segments and soft ether segments (see abstract). Regarding claim 11, the urethane segments are inherently "hard." Regarding claim 14, the disclosure that the polyurethane is made of an aromatic diisocyanate (e.g., 4,4'-diphenylmethane diisocyanate) and a short-chain glycol (e.g., 1,4-butanediol) (see paragraph 6) is considered to be anticipatory of the hard segment having a melting point of more than 100 degrees C.

Thus, the instant claims are anticipated.

3. Claims 11-14 and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Chang et al (U.S. Patent 5,346,788) as evidenced by Takeuchi et al. Regarding claim 11, Chang et al. teach a polyurethane-based membrane used as an electrochemical cell separator in the abstract. The membrane comprises a filler (see abstract). Regarding claim 11, the filler may comprise various oxides, carbonates, minerals, and silicates, such as silica or alumina, both of which are inherently Li-ion conducting materials (see col. 8, line 34-52). Regarding claim 13, the particle

size of the filler is preferably 0.01-50 microns (see col. 8, line 26). Since this range overlaps with the range recited in claim 13, it anticipates the range in the overlapping portion (0.01-30 microns). Furthermore, Example 1 teaches a specific silica filler particle size of 10 microns, which also anticipates the range of claim 13. Regarding claim 12, the polyurethane is thermoplastic (see abstract). Regarding claim 11, the reference teaches in Example 1 that the separator contains 120 weight parts of polyurethane and 150 weight parts of silica. This anticipates the claimed ranges because it results in 44 wt% polyurethane and 56 wt% silica, relative to the combined amount of polyurethane and silica. Regarding claim 11, the polyurethane is a segmented polyurethane comprising hard segments and soft segments (see col. 4, lines 19-48). Regarding claim 14, the soft segments comprise ether linkages (see col. 5, line 44-col. 6, line 5). Regarding claims 14 and 31, the disclosure that the polyurethane is made of a diisocyanate (e.g., MDI) and a short-chain glycol (see col. 7, line 5 et seq.) is considered to be anticipatory of the hard segment having a melting point of more than 100 degrees C. Regarding claim 31, the hard segment (component c) has a molecular weight of 50-400, and the soft segment (component b) has a molecular weight of 500-20000, both of which are anticipatory of the claimed ranges (see col. 4, line 30 et seq.). The soft segment has a glass transition temperature of less than 20 degrees C, which also anticipates the range recited in claim 31.

Thus, the instant claims are anticipated.

*Response to Arguments*

4. Applicant's arguments filed August 4, 2004 have been fully considered but they are not persuasive insofar as they apply to the present rejections. Applicants assert that neither of the fillers of the JP '981 or Chang references are lithium ion conducting. However, both fillers may comprise either alumina and silica, which are both ion conductive materials, as shown by the Takeuchi reference. As such, this argument is not persuasive.

*Allowable Subject Matter*

5. Claims 32 and 33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. The following is a statement of reasons for the indication of allowable subject matter:


Claim 32 recites that the solid is selected from a number of inorganic species, each containing lithium. Neither JP '981 nor Chang et al. teach or fairly suggest such lithium-containing materials as fillers. As such, claims 32 and 33 contain allowable subject matter.

*Conclusion*

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (571) 272-1299. The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr, can be reached at (571) 272-1414. The phone number for the organization where this application or proceeding is assigned is (571) 272-1700. Documents may be faxed to the central fax server at (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jonathan Crepeau  
Primary Examiner  
Art Unit 1746  
November 5, 2004